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USE BY HONEYEATERS AND PARROTS OF A BROWN
MALLET PLANTATION AND AN ARBORETUM AT
DRYANDRA WOODLAND, WESTERN AUSTRALIA, AT A
TIME OF YEAR WHEN FEW OTHER NECTAR RESOURCES
WERE AVAILABLE

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ABSTRACT

We report on nectar foraging for five species of honeyeater and three species of parrots at a Brown Mallet (*Eucalyptus astringens*) plantation and an arboretum at Dryandra Woodland, Western Australia, during spring and compare these to nectar foraging on *Dryandra* spp. nectar in nearby shrublands. The arboretum and mallet plantations provide nectar when flowers are scarce in adjacent woodlands and shrublands and are therefore presently useful for the conservation of nectar-feeders in Dryandra Woodland.

INTRODUCTION

Many honeyeaters (Meliphagidae) and parrots (Psittacidae) use nectar and rely on a sequence of

nectar resources that differ in their spatial and temporal availability (Keast 1968; Ford 1977; Ford and Paton 1977). Because of the spatial and temporal

variability in nectar resources, identifying nectar resources in major habitat types is necessary to ensure that conservation of honeyeaters and parrots occurs on spatial and temporal scales large enough to accommodate the movements of the birds. The problem is that the incremental loss of even small nectar resources in the sequence may cause the progressive decline of nectar-feeders, regardless of the amount of nectar available at other times or locations (Recher 1999; Ford *et al.* 2001).

We studied the foraging ecology of honeyeaters in wandoo woodland and *Dryandra* shrublands in Dryandra Woodland in which we determined what honeyeaters were present during winter and spring, the nectar resources used by honeyeaters, and the temporal patterns of nectar availability and use (Recher and Davis 2011). We also monitored the use of nectar by nectar-feeders in an arboretum, dominated by *Banksia*, *Hakea*, and *Eucalyptus* species that are not native to Dryandra Woodland, and in a plantation of Brown Mallet (*Eucalyptus astringens*). Brown Mallet is native to Dryandra Woodland, but originally had a limited distribution within the reserve. However, extensive plantations of Brown Mallet were established in the 1920s and 1930s and these are now one of the most extensive habitats in Dryandra Woodland. Despite this, information on their use, if any, by

birds is limited. We report here on the use of nectar in the arboretum and a mallet plantation in August and October, 1997 by honeyeaters and parrots, and compare these to the use of nectar in naturally occurring *Dryandra* shrublands nearby.

METHODS

Dryandra Woodland is a Class A Conservation Reserve (centred on 32°45'S, 116°55'E) near the town of Narrogin, Western Australia. The two plots were chosen because of a seasonal abundance of nectar-rich flowers. The arboretum is located on Tomingley Road at the intersection with Firetower Road in Dryandra Woodland. The mallet plantation studied is adjacent to the arboretum. The mallet plot was approximately 14 400 m², with an average canopy height of 11 m. Mallet plantations at Dryandra lack an understorey, with few shrubs and little ground vegetation. The arboretum plot consisted mostly of 3–5 m shrubs, and was about 1 ha in area. The mallet flowered from August through October. At the same time, there was an abundance of blossom in the arboretum (primarily *Hakea* and exotic eucalypts).

The mallet plantation was visited by WED for 48 minutes in August 1997 over two days, when flowering had commenced, and 160 minutes over six days in October, 1997 when

the Mallet was in full flower. He visited the arboretum for 143 minutes in October, 1997. Plots were visited between 0700–1200 h, with a few visits in the afternoon. WED recorded the bird species, a single foraging manoeuvre for each bird foraging on nectar, and the plant species. WED tried to avoid repeat observations by moving continually, but some birds may have been recorded more than once. Wandoo (*Eucalyptus wandoo*) and Powderbark (*E. accedens*), the dominant eucalypts at Dryandra Woodland outside of the mallet plantations, flower during summer and autumn. During our study, only individual trees or branches flowered, and produced meagre nectar resources.

RESULTS AND DISCUSSION

Data were recorded for five species of honeyeaters and three species of parrots on the arboretum and plantation plots: Brown Honeyeater (*Lichmera indistincta*), New Holland Honeyeater (*Phylidonyris novaehollandiae*), Singing Honeyeater (*Lichenostomus virescens*), Red Wattlebird (*Anthochaera carunculata*), Western Wattlebird (*A. lunulata*), and Port Lincoln Parrot (*Barnardius zonarius*), Red-capped Parrot (*Purpureicephalus spurius*), and Western Rosella (*Platycercus icterotis*).

During winter and spring in Dryandra Woodland, inflorescences of *Dryandra* species were

the primary source of nectar for honeyeaters (Recher and Davis 2011). Species came into blossom in sequence with *D. nobilis* the first to bloom in abundance, with the smaller *D. sessilis* and *D. armata* following. When *D. nobilis* was in heavy blossom, few honeyeaters used the arboretum or mallet plantation where nectar was limited in comparison. As the abundance of nectar from *D. nobilis* lessened, Red and Western Wattlebirds shifted to foraging in the arboretum and mallet plantation.

Mallet commenced flowering in early August and became a primary source of nectar for Red Wattlebirds (n=31; 48 min), which had fed earlier largely on shrubland *Dryandra nobilis*, which had mostly finished blossoming by August (Recher and Davis 2011). By October, when *D. sessilis* and *D. armata* had largely finished flowering (Recher and Davis 2011), Red Wattlebirds foraged in the mallet, but in diminished numbers (n=11; 160 min). No Western Wattlebirds foraged in the mallet in August, but were the dominant honeyeater in October utilizing mallet (n=35; 160 min), and the arboretum (n=80; n=143 min). Port Lincoln Parrots foraged for mallet nectar in the plantation in August (n=13; 48 min) and October (n=40; 160 min). Red-capped Parrots (n=3) and Western Rosella (n=2) took mallet nectar in October, but not August. Brown Honey-

eaters used the mallet in October (n=6), but not in August, while continuing to forage in reduced numbers for nectar in the shrublands (Recher and Davis 2011). New Holland Honeyeaters also used the shrublands through October, but in October were recorded in the arboretum feeding on *Hakea* nectar (n=3). They were not recorded in the mallet in either August or October. The arboretum was the primary place of concentration in Dryandra Woodland of Singing Honeyeaters in October (n=6). They were recorded by both WED and HFR at the arboretum, where they foraged mostly on *Hakea* spp. They were not recorded in the mallet in either August or October. Other honeyeaters were rarely seen in either the arboretum or mallet.

With few eucalypts in flower and *Dryandra* species completing their flowering cycle, the mallet plantation and the arboretum were a major source of nectar for honeyeaters and parrots, particularly in October. While there are sound ecological reasons to replace the mallet plantations with the original woodlands of Jarrah (*E. marginata*), Wandoo, and Powderbark this should be done incrementally to allow nectar-feeders time to adapt to seasonal changes in nectar availability. Retaining the arboretum, or even enhancing it with further

plantings of nectar-rich shrubs, such as *Hakea*, would assist in retaining a full complement of nectar-feeders in Dryandra Woodland.

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